



# STORMWATER MANAGEMENT

Conservation Landscape

Jessica Watson, SCD Stormwater Program Manager



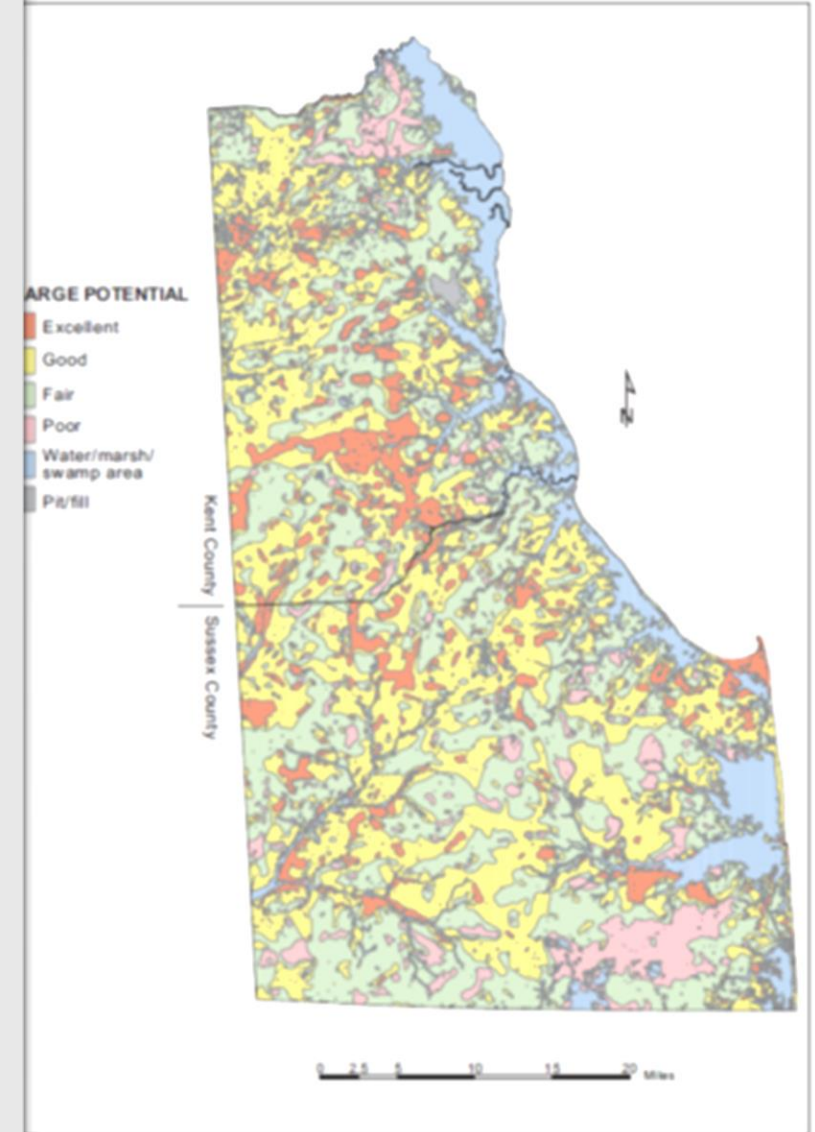


In Delaware, you are never very far from water when land is developed.

The potential for impacts to ecosystems and natural areas is significant.

# SEDIMENT AND STORMWATER REGULATIONS

- ❖ Established by Law and Regulation Statewide 1991.
- ❖ Requires all land disturbing activities over 5,000 square ft. to operate under an approved plan.
- ❖ Program is delegated to local municipalities, conservation districts, and DeIDOT.
- ❖ Delaware Department of Natural Resources and Environmental Control (DNREC) responsible for program performance statewide



Recharge potential map of Kent and Sussex counties. Map compiled from data of Andres et al. (2002).

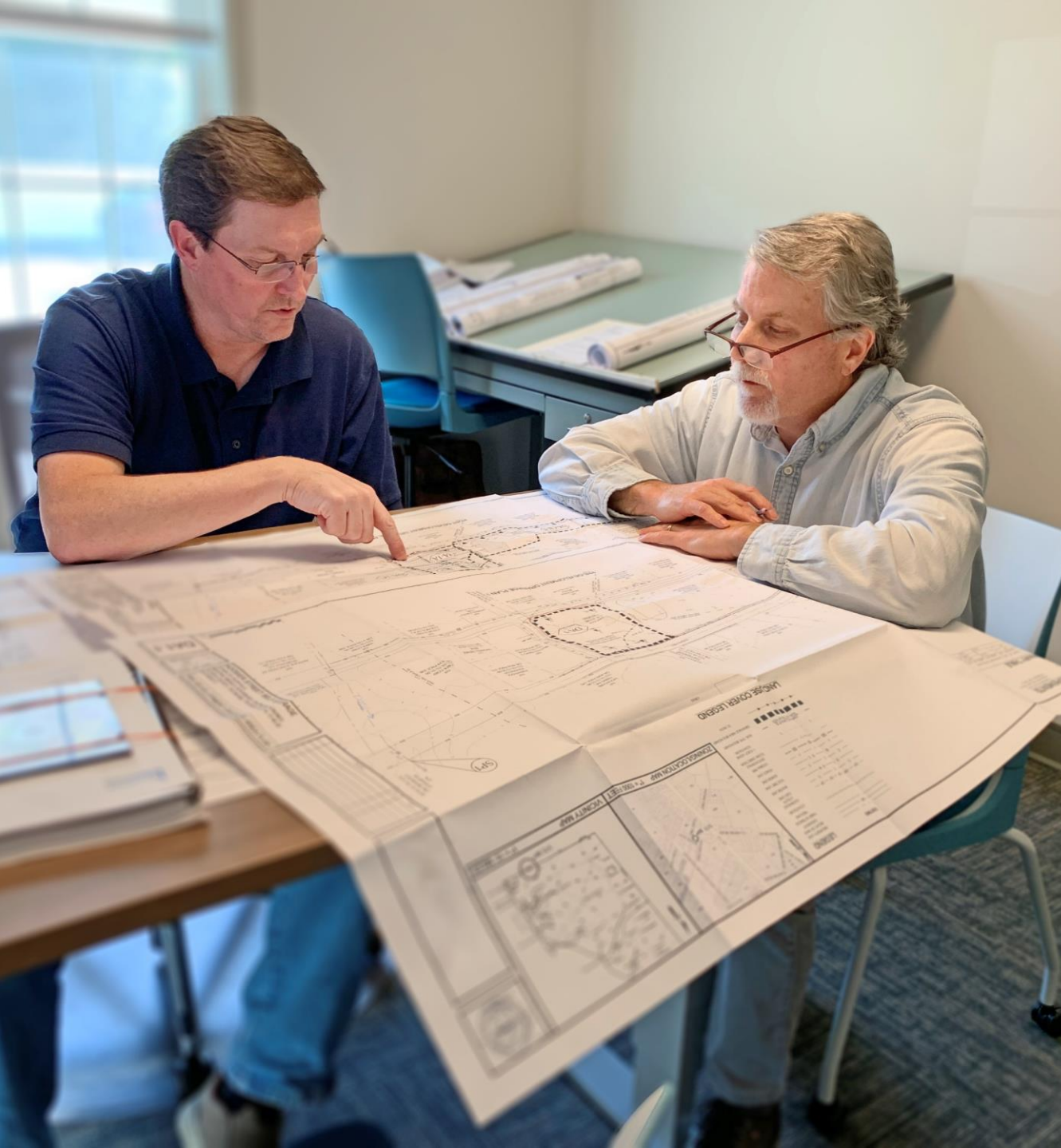




# Sediment & Stormwater Delegation

- Sediment & Erosion Control
- Stormwater Management Review
- Construction Inspection
- Maintenance Inspection
- Outreach & Education
- Technical Assistance





# Sediment & Stormwater Plan Review

- Conceptual Design Meeting
- Pre-application Meeting
- Plan Review
  - Stormwater Management
  - Erosion & Sediment Control
  - Downstream Analysis
  - Pollution Prevention
  - As-Built Review
- Technical Assistance





# Sediment & Stormwater Inspection

- Pre-construction Meeting
- Routine Site Inspection
- Stormwater Maintenance Inspection
  - Including follow-up inspection
  - Meetings with contractors/HOA
- Technical Assistance
- Drainage Complaints
- Outreach & Education





## Sediment & Stormwater Maintenance

- SCD is required to inspect all “closed out” projects and generate an inspection report.
- Approximately 3,000 closed out projects.
- SCD is required to follow-up on maintenance reports and inspect repairs.
- We provide outreach and education on the enhancement of stormwater and open space.





# Types of Stormwater Management Facilities

- WET PONDS
- DRY PONDS
- INFILTRATION PONDS
- UNDERGROUND STORMWATER SYSTEMS
- GREEN TECHNOLOGY - WATER QUALITY
  - BIOSWALES
  - BIORETENTION
  - FILTER STRIPS
  - INFILTRATION
  - WETLAND CREATION
  - SOIL AMENDMENTS
  - ROOFTOP DISCONNECTION

03/11/2010



# Restoring plant diversity and habitat



NATIVE FLOWERING  
PLANTS



NATIVE TREES



POLLINATORS



# Stormwater Areas

- Discuss with the Pond Maintenance Company what plantings are recommended for the pond side slopes.
- Wet ponds – recommend buffer on the entire pond slope up to the top of bank
  - Aquatic shelf should be planted as well
- Dry Pond
  - Discuss options with pond maintenance company
  - The planting on the bottom of the facility should be different than the side slopes.

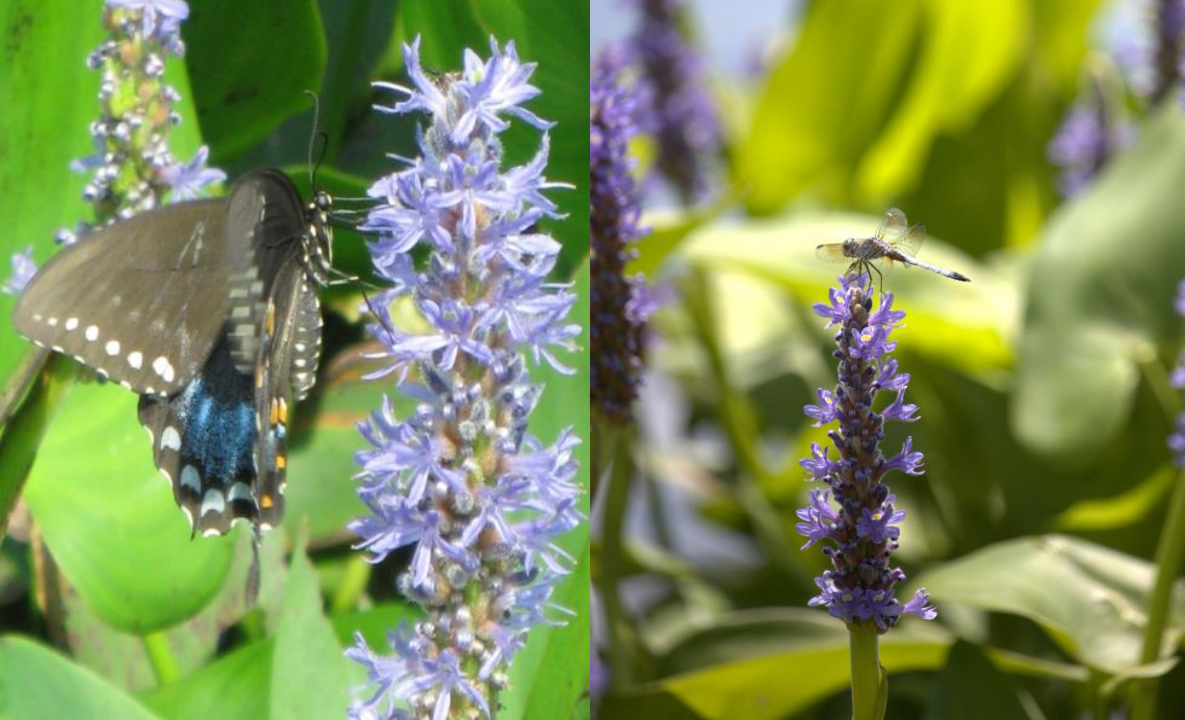




# Buffer Benefits

- No Mow Zones – Optional, but strongly encouraged
- Work with landscaper or pond maintenance company on enhancing the buffer to include beneficial plants
- Community decision





# Buffer Benefits

- Helps deter geese
- Nutrient update
- Reduces erosion
- Improves Water Quality
- Better wildlife habitat





Buffer, bird boxes,  
flowering vegetation













# Dry Ponds

Dry Ponds are designed to drain 48 hours after a rain event

## Maintenance Challenges

- Invasive plant management
- Soggy pond bottoms
- Difficult to mow

## Recommendations

- Allow the pond bottom to naturalize
- Enhance with meadow/grass seed mixes
- Mow at least once a year to control tree growth









# Green Technology: Bioswale

- Provides water quality treatment by removing sediment and nutrients
- Low Maintenance
- Provide routine maintenance
- Inspect for drainage obstructions/holding water
- Maintain grass height 6-8 inches – for increased water quality
- Can be enhanced with native/flowering plants

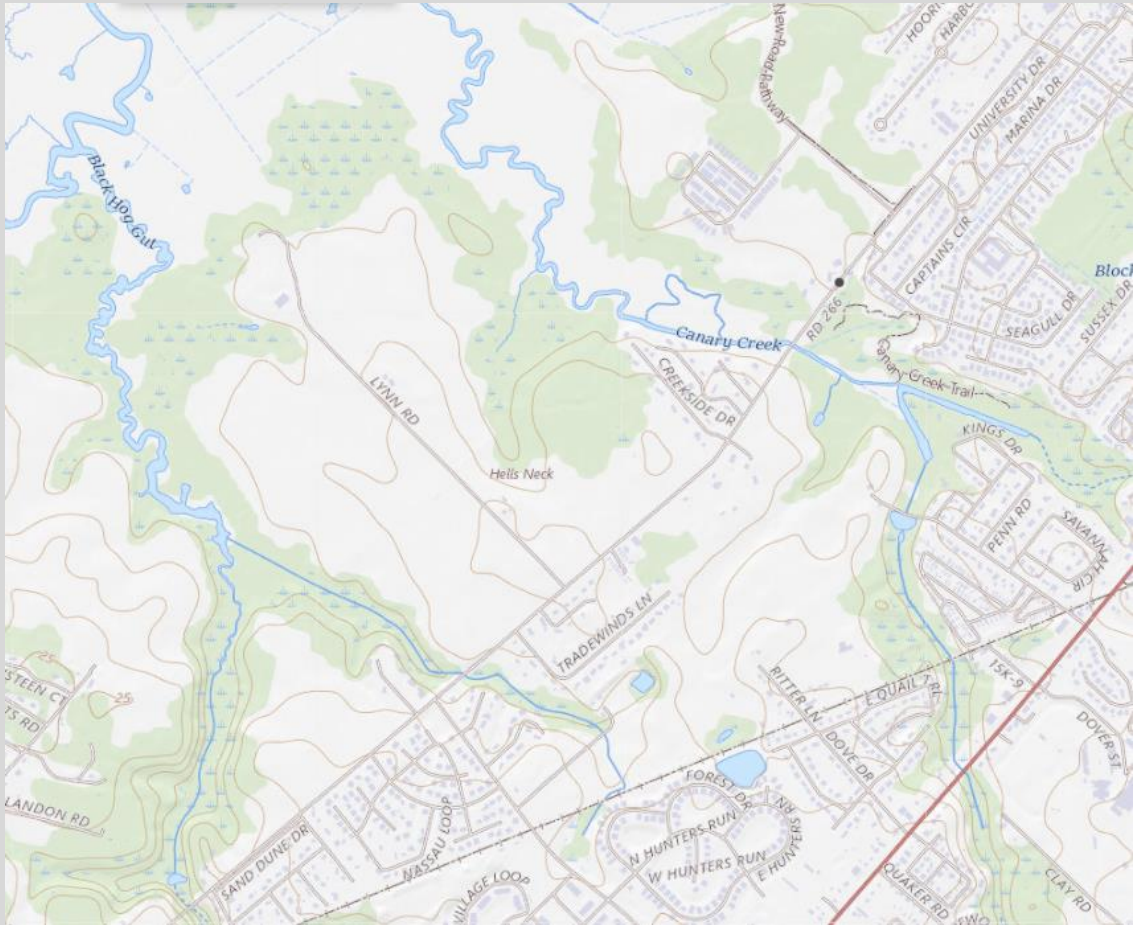




# Conservation/Native Landscaping

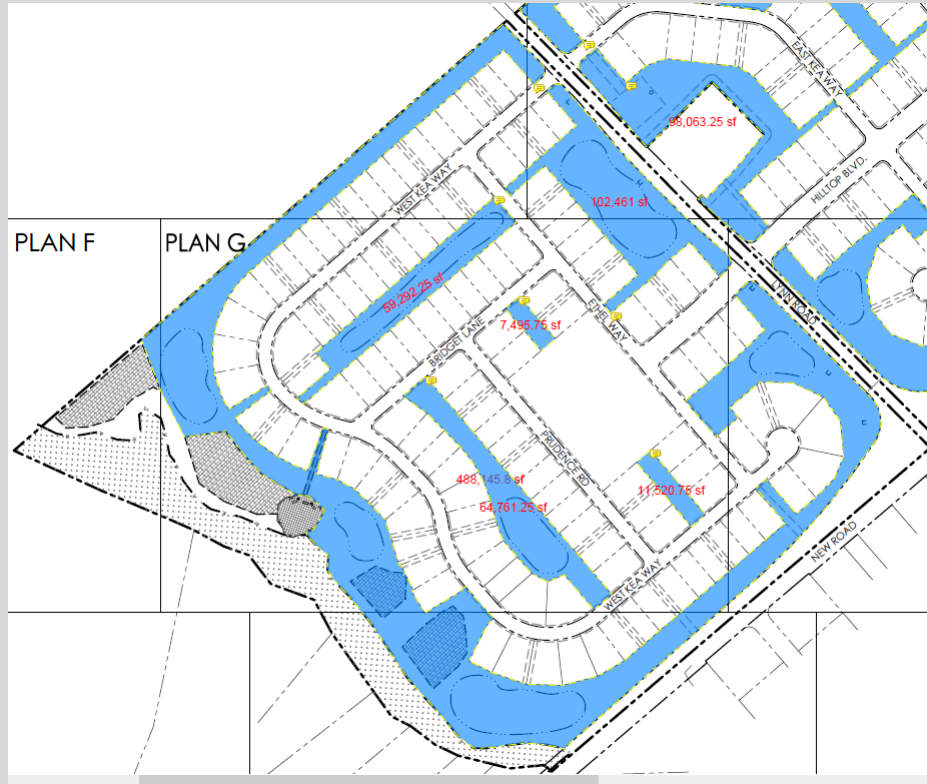
## BENEFITS:

- Naturalize areas to create pollinator habitat and allow for buffers along ditches and waterways
- Improve water quality
- Attract birds/butterflies
- Reduce maintenance, mowing, and fertilization that goes along with irrigation, sod, or turfgrass.
- Recreation/trails
- Selling feature





# Pollinator/Habitat Native Mixes



- OPEN SPACE OPTIONS

- Native Pollinator Mix w/ Grasses
- Showy Northeast Native Wildflower & Grass Mix
- Native trees
- Cool Season Grass Mix



# Native Pollinator Mix

- Variety of seeding options to provide food and habitat
- When attracting butterflies – plant milkweed
- Avoid using pesticides
- Monarch butterflies love swamp milkweed, showy milkweed, common milkweed and butterfly milkweed







## Showy Northeast Native Wildflower & Grass Mix

The native wildflowers and some grasses provide a gorgeous display of color from spring to fall. Designed for upland sites with well-drained soils and full sun

### Showy Northeast Native Wildflower & Grass Mix

The native wildflowers and some grasses provide a gorgeous display of color from spring to fall.

Designed for upland sites with well-drained soils and full sun to semi-shaded areas; ideal for attracting butterflies and hummingbirds.

**Item Number:** ERNMX-153

**Product Categories:**

Pollinator Favorites, Uplands & Meadows

**Height:** 1.0 – 5.0 Ft

**Seeding Rate:** 20 lbs/acre with 30 lbs/acre of a cover crop.

**Price:** \$37.47/Lb



# Sustainable Landscapes Community Open Space Workshop



University of Delaware Cooperative Extension  
Susan Barton

[Sustainable Landscapes - Stormwater Workshop Series Webinar held 4/16/20. – YouTube](#)

[https://www.sussexconservation.org/images/pdfs/Stormwater\\_pdf/Maintenance\\_Presentations2019\\_12\\_05/Sustainable\\_Landscapes.pdf](https://www.sussexconservation.org/images/pdfs/Stormwater_pdf/Maintenance_Presentations2019_12_05/Sustainable_Landscapes.pdf)

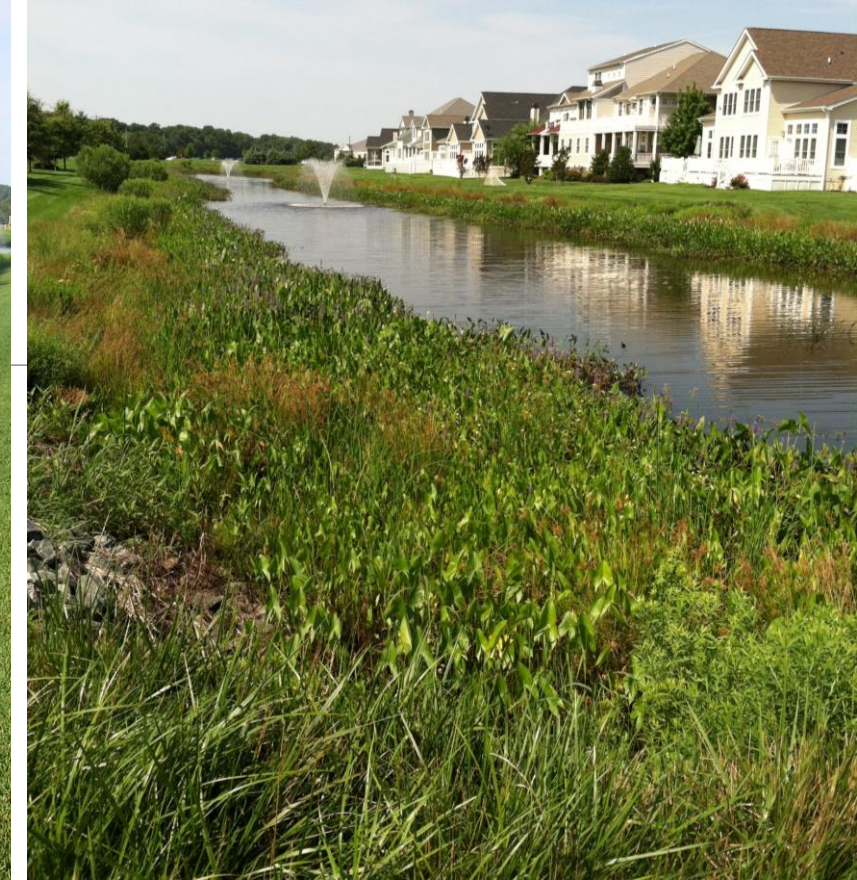




# Managing Expectations

- Recommend developers work with professionals on how best to enhance open space.
- Open space areas can be planted immediately with appropriate seed/wildflower mixes.
- Have a management plan so that natural areas are sustainable.
- Management plans should be turned over to future HOA





Successful Maintenance



# Stormwater Technical Resources



**Sussex Conservation District**  
**Website:**

***Sussexconservation.org***

Jessica Watson

Sediment & Stormwater Program  
Manger

[Jessica.Watson@sussexconservation.org](mailto:Jessica.Watson@sussexconservation.org)

302-856-2105 ext. 107





*Sussex*  
conservation  
district

PREPARE • PROTECT • PRESERVE

# Thank you

## Jessica Watson

Stormwater Program Manager  
Sussex Conservation District

[Jessica.Watson@sussexconservation.org](mailto:Jessica.Watson@sussexconservation.org)

[www.sussexconservation.org](http://www.sussexconservation.org)